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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,837	02/08/2006	Rolf Theo Anton Apetz	DE030288	7344
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EXAMINER				
SONG, HOON K				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/567,837

Applicant(s)

APETZ ET AL.

Examiner

Hoon Song

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 1-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/85/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Inventor's Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 12-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 12, it is unclear what is meant by "a filter for retaining a substance originated from a radiation source" how to retain the debris by the filter? Regarding claim 15, "can be" is unclear; Regarding claims 16 and 18-20, the support structure lacks proper antecedent basis. Regarding claim 20, "the woven structure" lacks proper antecedent basis; Regarding claim 22, "a filter" lacks proper antecedent basis; Regarding claim 27, "the substance in the radiation source" lacks proper antecedent basis; Regarding claim 28, "the strip" lacks proper antecedent basis. Similar 112 issues exist throughout the claims. Revision/correction for all claims is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12-18, 21-27, 29-34 and 38-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Wedowski (WO02/059905) (see US7154666B2 for reference).

Regarding claim 12, Wedowski teaches a device comprising:

A radiation source (column 2 line 31 to column 4 line 60); and

A filter for retaining a substance originating from the radiation source, the filter including a thin layer that is transparent to extreme ultraviolet and/or soft x-ray radiation, wherein the thin layer is preponderantly zirconium, niobium, molybdenum or zirconium carbide, zirconium dioxide, silicon carbide, silicon nitride, boron nitride or a combination thereof (column 10 lines 29-38).

Regarding claim 13, Wedowski teaches a thin layer is connected to a support structure 3.

Regarding claim 14, Wedowski teaches the thin layer and the support structure is made of a material having at least 1300 degrees melting point (column 8 lines 59-67).

Regarding claim 15, Wedowski teaches at least the thin layer is manufactured (column 8 lines 59-67).

Regarding claim 16, Wedowski teaches at least the thin layer comprising silicon (column 8 lines 59-67).

Regarding claim 17, Wedowski teaches the thin layer has layer thickness of 100 nm (column 8 lines 59-67).

Regarding claim 18, Wedowski teaches the support structure has a thickness of 1 micron to 1 mm (column 8 lines 59-67).

Regarding claim 21, Wedowski teaches the radiation source and the filter are means for EUV lithography (figure 7, abstract).

Regarding claim 22, Wedowski teaches the filter is operated between 900 degrees to 1300 degrees (figure 7).

Regarding claim 23-24, note: the temperature for the filter is adjustable is functional/intended use and no patentable weight.

Regarding claim 25, Wedowski teaches a foil trap arranged between the radiation source and the filter (figure 7)

Regarding claim 26, Wedowski teaches the filter seals off the radiation source in the form of a window (figure 7)

Regarding claim 27, "the substance reaches a pressure" is functional and no patentable weight.

Regarding claim 29, Wedowski teaches device, comprising:

a radiation source (column 2 line 31 to column 4 line 60); and

a filter 10 for retaining a substance originating from the radiation source (column 2 line 31 to column 4 line 60), the filter including a thin layer that is transparent to extreme ultraviolet and/or soft X-ray radiation, and

a support structure 2 for the thin layer, wherein the support structure is preponderantly zirconium, niobium, molybdenum, silicon, zirconium carbide, zirconium dioxide, silicon carbide, silicon nitride, boron nitride, or a combination thereof (figure 6a, column 10 lines 29-38).

Regarding claim 30, Wedowski teaches the thin layer is connected to the support structure, or in that the thin layer and the support structure can be manufactured as an integral whole (figure 6a).

Regarding claim 31, Wedowski teaches a material used for the thin layer and the support structure has a melting point of at least 1300 °C.

Regarding claim 32, Wedowski teaches the thin layer is preponderantly zirconium, niobium, molybdenum, silicon, zirconium carbide (ZrC), zirconium dioxide, silicon carbide

(SIC), silicon nitride (Si₃N₄), boron nitride (BN), or a combination thereof (figure 6a, column 10 lines 29-38).

Regarding claim 33, Wedowski teaches the thin layer has a layer thickness of approximately 100 nm (figure 6a, column 10 lines 29-38).

Regarding claim 34, Wedowski teaches the support structure has a thickness of approximately 1 μ m to 1 mm (figure 6a, column 10 lines 29-38).

Regarding claim 38, Wedowski teaches the filter seals off the radiation source in the form of a window (column 2 line 31 to column 4 line 60).

Regarding claim 39, Wedowski teaches the radiation source and the filter are means for EUV lithography (column 2 line 31 to column 4 line 60).

Claims 29 and 35-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Pinneo et al. (US 4939763).

Regarding claim 29, Pinneo teaches device, comprising:
a radiation source (column 1 lines 35-38); and
a filter 10 for retaining a substance originating from the radiation source, the filter including a thin layer 10 that is transparent to extreme ultraviolet and/or soft X-ray radiation, and
a support structure 12 for the thin layer, wherein the support structure is preponderantly zirconium, niobium, molybdenum, silicon, zirconium carbide, zirconium dioxide, silicon carbide, silicon nitride, boron nitride, or a combination thereof (column 4 lines 1-27).

Regarding claim 35, Pinneo teaches the support structure is constructed in the form of strips.

Regarding claim 36, Pinneo teaches the strips are in the form of a grid-type or honeycomb-type woven structure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 19-20 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over More (US 4178509) in view of Wedowski.

Regarding claims 12 and 28, More teaches a device comprising:

A radiation source (column 2 line 31 to column 4 line 60); and

A filter for retaining a substance originating from the radiation source, the filter including a thin layer that is transparent to extreme ultraviolet and/or soft x-ray radiation,

However More fails to teach that the thin layer is preponderantly zirconium, niobium, molybdenum or zirconium carbide, zirconium dioxide, silicon carbide, silicon nitride, boron nitride or a combination thereof.

Wedowski teaches a filter made of the material (column 10 lines 29-38).

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the filter of More with the material as taught by Wedowski, since it would provide better optical characteristics.

Regarding claim 19, More teaches the support structure 8 is constructed in the form of strips.

Regarding claim 20, More teaches the support structure is obtained by means of erosion, laser processing or photochemical etching.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wedowski in view of Ogushi et al. (US 2003/0020890A1).

Regarding claim 37, Wedowski fails to teach a foil trap arranged between the radiation source and the filter.

Ogushi teaches a foil strap

It would have been obvious to one of ordinary skill in the art at the time of the invention to adapt the lithography system of Wedowski with the foil strap as taught by Ogushi, since it would reduce contamination from debris.

Response to Arguments

Applicant's arguments filed 2/28/2008 have been fully considered but they are not persuasive.

The applicant argues that Wedowski fails to teach fails to teach a thin layer is preponderantly zirconium, niobium, molybdenum or zirconium carbide, zirconium dioxide, silicon carbide, silicon nitride, boron nitride or a combination thereof. The examiner disagrees.

Wedowski teaches a filter having a layer that is niobium (column 10 lines 29-38). Accordingly, Wedowski teaches the claimed invention and the applicant's argument is not persuasive.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 9:30 AM - 7 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Hoon Song/
Primary Examiner, Art Unit 2882